Listing of Claims:

1. (cancelled).

2. (currently amended) ~~In combination with a diaphragm valve according to claim 1,~~ A valve system, comprising:

a diaphragm valve including a valve body defining a valve passage having an inlet and an outlet, and a diaphragm having first and second sides and positioned such that the first side is proximal to the valve passage, the diaphragm operable, in response to an applied actuation force, to transition between a closed position blocking the valve passage and an open position wherein the valve passage is at least partially open;

an enclosed space adjacent the second side of the diaphragm;

a vent passage communicating with the enclosed space to vent the enclosed space, thereby facilitating transitioning of the diaphragm between the open and closed positions; and

means operatively coupled to the vent passage for reducing fluid pressure in the enclosed space below an ambient pressure outside the valve body.

3. (currently amended) ~~In combination with a diaphragm valve according to claim 1,~~ A valve system, comprising:

a diaphragm valve including a valve body defining a valve passage having an inlet and an outlet, and a diaphragm having first and second sides and positioned such that the first side is proximal to the valve passage, the diaphragm operable, in response to an applied actuation force, to transition between a closed position blocking the valve passage and an open position wherein the valve passage is at least partially open;

an enclosed space adjacent the second side of the diaphragm;

a vent passage communicating with the enclosed space to vent the enclosed space, thereby facilitating transitioning of the diaphragm between the open and closed positions; and

a pump operatively coupled to the vent passage.

4. (currently amended) A ~~diaphragm valve and pump~~ valve system according to claim 3 wherein the pump is operable to draw a vacuum in the enclosed space.

5. (currently amended) A ~~diaphragm valve and pump~~ valve system according to claim 3 wherein the pump is operable to draw a vacuum of between approximately 0.1 mbar and approximately 20 mbar within the enclosed space.

6. (currently amended) A ~~diaphragm~~ valve system according to claim~~[[1]]~~ 2 further comprising an actuator coupled to the diaphragm for applying an actuation force to

the diaphragm for transitioning the diaphragm between the open position and the closed position.

7. (currently amended) A ~~diaphragm~~ valve system according to claim~~[[1]]~~ 2 further comprising a spring for biasing the diaphragm toward one of the open and closed positions.

8. (currently amended) A ~~diaphragm~~ valve system according to claim 7 wherein the spring biases the diaphragm toward the closed position, and further comprising an actuator operably coupled to the diaphragm for transitioning the diaphragm from the closed position to the open position.

9. (currently amended) A ~~diaphragm~~ valve system according to claim 7 wherein the spring biases the diaphragm toward the open position, and further comprising an actuator operably coupled to the diaphragm for transitioning the diaphragm from the open position to the closed position.

10. (currently amended) A diaphragm valve ~~according to claim 6 further~~ comprising:

a valve body defining a valve passage having an inlet and an outlet;

a diaphragm having first and second sides and positioned such that the first side is proximal to the valve passage, the diaphragm operable, in response to an applied actuation force, to transition between a closed position blocking the valve passage and an open position wherein the valve passage is at least partially open;

an enclosed space adjacent the second side of the diaphragm;

a vent passage communicating with the enclosed space to vent the enclosed space, thereby facilitating transitioning of the diaphragm between the open and closed positions;

an actuator coupled to the diaphragm for applying an actuation force to the diaphragm;

a heating body positioned proximal to the second side of the diaphragm to maintain an operating temperature of the diaphragm; and

a thermally resistive member interposed between the valve passage and the actuator.

11. (original) A diaphragm valve according to claim 10 wherein the actuator includes a solenoid.

12. (currently amended) A diaphragm valve according to claim 10 wherein the ~~venting~~ vent passage passes through the heating body.

13. (currently amended) A diaphragm valve according to claim~~[[1]]~~ 3 wherein a section of the ~~venting~~ vent passage passes through the valve body and the pump is connected to said section of the vent passage.

14. (cancelled).

15. (currently amended) A diaphragm valve ~~according to claim 14 further comprising~~ comprising:

a valve body defining a valve passage having an inlet and an outlet;

a diaphragm having first and second sides and positioned such that the first side is proximal to the valve passage, the diaphragm operable, in response to an applied actuation force, to transition between a closed position blocking the valve passage and an open position wherein the valve passage is at least partially open;

an enclosed space adjacent the second side of the diaphragm;

a vent passage communicating with the enclosed space to vent the enclosed space, thereby facilitating transitioning of the diaphragm between the open and closed positions;

an actuator ~~a spring that biases the plunger away from the stop, and wherein the actuator comprises~~ including a solenoid coupled to the diaphragm for applying an actuation force to the diaphragm, the actuator including a movable plunger, a stop positioned to limit the movement of the plunger, and a blocking member interposed between the plunger and the stop, the movable plunger~~[[is]]~~ being magnetically attracted toward the stop when an electric current is applied to the solenoid, and the blocking member comprises a nonmagnetic material ~~to thereby reduce a release time necessary after removal of the electric current from the solenoid until the spring moves the plunger~~.

16. (currently amended) A diaphragm valve according to claim~~[[1]]~~ 18 wherein the diaphragm is comprised of a plastic material.

17. (currently amended) A diaphragm valve according to claim~~[[1]]~~ 18 wherein the diaphragm is comprised of an elastomeric material.

18. (currently amended) A precursor material delivery system ~~including~~ comprising:

a diaphragm valve ~~according to claim 1~~ including a valve body defining a valve passage having an inlet and an outlet, and a diaphragm having first and second sides and positioned such that the first side is proximal to the valve passage;

an enclosed space adjacent the second side of the diaphragm; and

a vent passage communicating with the enclosed space.

19. (original) A precursor material delivery system including a diaphragm valve according to claim 11.

20. (currently amended) An ALD reactor ~~including~~ comprising:

a diaphragm valve including a valve body defining a valve passage having an inlet and an outlet, and a diaphragm having first and second sides and positioned such that the first side is proximal to the valve passage;

an enclosed space adjacent the second side of the diaphragm;

a vent passage communicating with the enclosed space; and

means for ~~generating~~ applying suction ~~according to claim 2.~~ to the vent passage.

21. (original) An ALD reactor including a diaphragm valve according to claim 15.

22. (cancelled).

23. (cancelled).

24. (currently amended) A diaphragm valve system ~~according to claim 22 further comprising~~ comprising:

a body means defining a valve passage having an inlet and an outlet;

a diaphragm having first and second sides and positioned such that the first side is proximal to the valve passage;

means for defining an enclosed space adjacent the second side of the diaphragm;

means for reducing a fluid pressure in the enclosed space; and

means for heating a medium in the valve passage.

25. (currently amended) A diaphragm valve system ~~according to claim 23 further comprising~~ comprising:

a body means defining a valve passage having an inlet and an outlet;

a diaphragm having first and second sides and positioned such that the first side is proximal to the valve passage;

an actuator operatively coupled to the diaphragm;

means for defining an enclosed space adjacent the second side of the diaphragm;

means for reducing a fluid pressure in the enclosed space; and

means for attenuating heat transfer between the valve passage and the ~~means for actuating~~ actuator.

26. (currently amended) A diaphragm valve system according to claim ~~[[22]]~~ 24 for use in an ALD reactor.

27. (original) A diaphragm valve system according to claim 25 for use in an ALD reactor.

28. (currently amended) A method of transitioning a diaphragm between a closed position and an open position in a diaphragm valve having a valve body, the valve body defining a valve passage having an inlet and an outlet, the diaphragm having a first side proximal to the valve passage and a second side adjacent an enclosed space, the diaphragm further being operable in response to an applied actuation force to flex between the closed position blocking the valve passage and the open position wherein the valve passage is at least partially open to allow flow through the valve passage, the method comprising:

providing a venting passage in communication with the enclosed space; and

venting the enclosed space via the venting passage to prevent buildup of pressure behind the diaphragm, thereby facilitating transitioning the diaphragm between the closed position and the open ~~position.~~position; and

applying suction to the venting passage.

29. (cancelled).

30. (currently amended) A method according to claim~~[[29]]~~ 28 further comprising applying an actuation force to the diaphragm.

31. (new) A method according to claim 28 further comprising biasing the diaphragm toward one of the open and closed positions.

32. (new) A valve system according to claim 3 further comprising an actuator coupled to the diaphragm for applying an actuation force to the diaphragm for transitioning the diaphragm between the open position and the closed position.

33. (new) A valve system according to claim 32 wherein the actuator includes a solenoid.

34. (new) A valve system according to claim 3 further comprising a spring for biasing the diaphragm toward one of the open and closed positions.

35. (new) A valve system according to claim 34 wherein the spring biases the diaphragm toward the closed position, and further comprising an actuator operably coupled to the diaphragm for transitioning the diaphragm from the closed position to the open position.

36. (new) A valve system according to claim 34 wherein the spring biases the diaphragm toward the open position, and further comprising an actuator operably coupled to the diaphragm for transitioning the diaphragm from the open position to the closed position.

37. (new) A valve system according to claim 6 wherein the actuator includes a solenoid.

38. (new) A precursor material delivery system according to claim 18 further comprising a pump operatively coupled to the vent passage.

39. (new) A precursor material delivery system according to claim 18 further comprising means for reducing fluid pressure in the enclosed space.

40. (new) A precursor material delivery system according to claim 18 further comprising means for heating a medium in the valve passage.

41. (new) A precursor material delivery system according to claim 18 further comprising an actuator operatively coupled to the diaphragm.

42. (new) A precursor material delivery system according to claim 41 wherein the actuator includes a solenoid.

43. (new) A diaphragm valve system according to claim 25 wherein the actuator includes a solenoid.